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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/606,445	06/29/00	PULIMI N	CS10744

WM01/0904

MOTOROLA INC
PERSONAL COMMUNICATIONS SECTOR
INTELLECTUAL PROPERTY DEPARTMENT (PJB)
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EXAMINER	
CONTEE, J	
ART UNIT	**PAPER NUMBER**
2681	3

DATE MAILED: 09/04/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/606,445	Pulimi et al.
Examiner	**Art Unit**
Joy K. Contee	2681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 29, 2000*

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-16* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☒ Claim(s) *12-16* is/are allowed.

6) ☒ Claim(s) *1-9* is/are rejected.

7) ☒ Claim(s) *10 and 11* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Hope, U.S. Patent No. 6,075,488.

Regarding claim 1, Hope discloses a cellular telephone a multi-band antenna apparatus characterized by:

a multi-band antenna (col. 1, lines 38-44); and

a grounded helical antenna surrounding the multi-band antenna (col. 1, lines 45-47 and col. 2, lines 64-67).

3. Claims 6 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhinong et al. ("Zhinong"), U.S. Patent no. 5,963,871.

Regarding claim 6, Zhinong discloses a cellular telephone antenna characterized by:

an inner (i.e., whip antenna inside the helical coil) antenna (see Figs. 4A and 4B); and

a radio frequency (RF) grounded helical antenna surrounding the inner antenna (see Figs. 4A and 4B), the RF grounded helical antenna including, a first section having a distance between adjacent turns of a first predetermined amount (col. 7, lines 27-31), and

a second section having a distance between adjacent turns of a second predetermined amount, the second predetermined amount less than the first predetermined amount (col. 7, lines 27-31).

Regarding claim 7, Zhinong discloses the cellular telephone antenna as in claim 6 wherein a resonant frequency of the RF grounded helical antenna is substantially equal to a resonant frequency of the inner antenna (col. 3, lines 39-44 and col. 6, lines 22-39 and col. 8, lines 19-37).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hope, in view of Applicant's own admission as prior art (see Disclosure, page 4, lines 20-27).

Regarding claim 2, Hope discloses the multi-band antenna apparatus as in claim 1. Hope also discloses the multi-band antenna comprising a printed circuit board (PCB) carried by the

cellular telephone housing, the PCB having a metalized ground plane, the metalized ground plane and the grounded helical antenna coupled to the cellular telephone housing (see Fig. 1A and col. 2, lines 60-67 to col. 3, lines 1-7).

Hope does not explicitly disclose the apparatus further characterized by:

a cellular telephone housing formed of a conductive material.

However, the Applicant admits in the Disclosure that it is "known in the art" the appartus characterized by: a cellular telephone housing formed of a conductive material (page 4, lines 20-27).

At the time of the invention it would have been obvious to one of ordinary skill in the art to have modified Hope to include a conductive housing for the purpose of preventing electromagnetic energy present in the interior space from passing through the surface of the housing.

Regarding claim 3, Hope further discloses the multi-band antenna apparatus as in claim 2 wherein the multi-band antenna comprises a helical antenna coupled to a monopole (i.e., straight radiating element #60 in Fig. 6) antenna (col. 4, lines 30-45).

6. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hope, Applicant's admission and Zhinong.

Regarding claim 4, Hope discloses the multi-band antenna apparatus as in claim 3. However, Hope does not explicitly disclose the multi-band antenna wherein the grounded helical

antenna includes turns around a linear axis, a distance between at least some adjacent turns of the grounded helical antenna varying along the linear axis.

In a similar field of endeavor Zhinong is evidence of the multi-band antenna wherein the grounded helical antenna includes turns around a linear axis, a distance between at least some adjacent turns of the grounded helical antenna varying along the linear axis (col. 7, lines 27-31).

At the time of the invention it would have been obvious to one of ordinary skill in the art to have modifed Hope to include varying spacing between the turns of the helical antenna for the purpose of providing a "non-uniform" helical structure in which selective tuning is provided to acheive multiple resonant frequencies as is taught in Zhinong.

Regarding claim 5, Zhinong further discloses the multi-band antenna apparatus as in claim 4, wherein the grounded helical antenna comprises a top section and a lower section along the linear axis, the lower section coupled to the metalized ground plane and the top section located at an end opposite the lower section along the linear axis, a distance between adjacent turns of the top section narrower than a distance between adjacent turns of the lower section (col. 7, lines 27-31 and see Fig. 5B).

At the time of the invention it would have been obvious to one of ordinary skill in the art to have modifed Hope to include varying spacing between the turns of the helical antenna for the purpose of providing a "non-uniform" helical structure in which selective tuning is provided to acheive multiple resonant frequencies as is taught in Zhinong.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhinong in view of Applicant's admission as prior art.

Regarding claim 8, Zhinong discloses the multi-band antenna apparatus as in claim 6. Zhinong is also evicence of the multi-band antenna comprising a printed circuit board (PCB) carried by the cellular telephone housing, the PCB (i.e., matching network circuitry) having a metalized ground plane, the metalized ground plane and the grounded helical antenna coupled to the cellular telephone housing (see Fig. 4C and col. 6, lines 63-67).

Zhinong does not explicitly disclose the apparatus further characterized by:

a cellular telephone housing formed of a conductive material.

However, the Applicant admits in the Disclosure that it is "known in the art" the appartus characterized by: a cellular telephone housing formed of a conductive material (page 4, lines 20-27).

At the time of the invention it would have been obvious to one of ordinary skill in the art to have modified Hope to include a conductive housing for the purpose of preventing electromagnetic energy present in the interior space from passing through the surface of the housing.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhinong, in view of Garay et al. ("Garay"), U.S. Patent No. 4,772,895.

Regarding claim 9, Zhinong discloses the cellular telephone antenna as in claim 6. Zhinong does not explicitly disclose cellular telephone antenna wherein the inner antenna comprises an inner helical antenna.

However, in a similar field of endeavor, Garay is evidence of the cellular telephone antenna wherein the inner antenna comprises an inner helical antenna (col. 3, lines 3-8).

At the time of the invention it would have been obvious to one of ordinary skill in the art to have modified Zhinong to include a inner helical coil for the purpose of obtaining a plurality of resonance frequencies.

Allowable Subject Matter

9. Claims 10 and 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 12-16 allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 12-16, it is not explicitly found in the prior art of record, a cellular telephone antenna characterized by:a first helical antenna coupled to the transmitter and the receiver, the first helical antenna tuned to a resonant frequency of operation; and a grounded helical antenna surrounding the first helical antenna, the grounded helical antenna formed to have a first section of adjacent helical turns that are spaced farther apart than adjacent helical turns of

the first helical antenna, the grounded helical antenna formed to have an upper capacitive loading segment to tune the grounded helical antenna to subtantially the resonant frequency of operation.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kivela, U.S. Patent No. 5,854,970, discloses an accessory RF unit for hand-held wireless telephone systems.

Kenoun et al., U.S. Patent No. 6,275,198, discloses a wide band dual mode antenna.

Ishikawa et al., U.S. Patent No. 6,163,300, discloses a multi-band antenna suitable for use in a mobile radio device.

Marthinsson et al., U.S. Patent No. 6,057,807, discloses a dual band antenna means incorporating helical and elongated structures.

Simmons et al., U.S. Patent No. 6,052,090, discloses a multi-band antenna.

Phillips, U.S. Patent No. 4,725,845, discloses a retractable helical antenna.

Zhou et al., U.S. Patent No. 6,127,979, discloses an antenna adapted to operate in a plurality of frequency bands.

Haapala, U.S. Patent No. 6,054,966, discloses an antenna operating in two frequency ranges.

Engblom, U.S. Patent No. 5,771, 023, discloses a broad band helical antenna.

Eberhardt et al., U.S. Patent No. 5,231,412, discloses sleeved monopole antenna.

Birnbaum, U.S. Patent No. 5,841,407, discloses a multiple-tuned normal mode helical antenna.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joy K. Contee whose telephone number is (703) 308-0149. The Examiner can normally be reached between 5:30 a.m. and 2:00 p.m., Monday- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost, can be reached on (703)305-4778.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)305-4700

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for formal or informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

JKContee

Joy K. Contee

August 17, 2001

DWAYNE BOST
SUPERVISORY PATENT EXAMINER
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